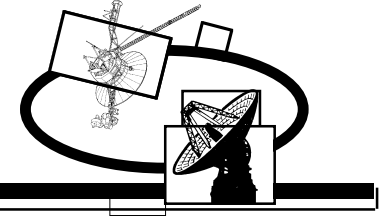
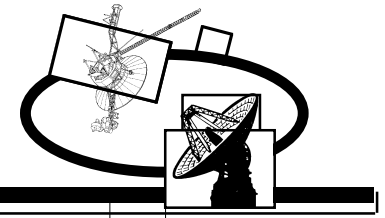


W-band Assessment Agenda



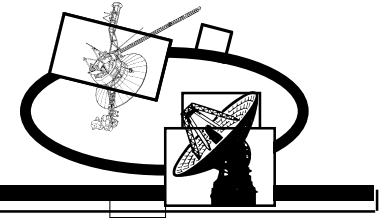
- **Review minutes, in particular, restatement of Q3 goals (Teitelbaum)**
- **W-band receiver status (Seiffert)**
- **10 Gbit/sec feasibility study (Gaier)**
- **End-to-end phase stability measurement (Durgadas Bagri)**
 - Prospects for quick and dirty injection of a single tone
 - Development of a W-band pulse-cal(phase cal) system
- **Observational strategy for achieving pointing objectives (all)**
- **FY002 proposal planning (all)**

W-band Assessment Task Plan Summary



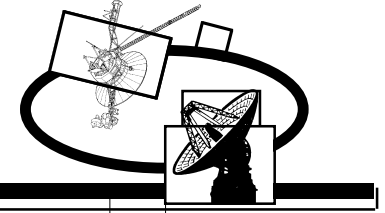
- **Phase-stabilizing the W-band receiver**
- **Completing development of computer-controlled noise temperature calibration instrumentation**
- **Optimizing the noise temperature performance of the W-band receiver on the telescope**
- **Assessing the W-band pointing capability with point sources using the existing radio astronomy and antenna calibration toolkit**
- **Measuring the aperture efficiency as a function of azimuth and elevation**
- **Applying the raster scan methodology to characterize the RF beam at W-band and to develop improved blind-pointing models. The raster scan will be studied systematically at X-, Ku- and W-band with the goal of understanding tradeoffs as a function of frequency and optimizing the technique for W-band (and Ka-band).**
- **Assessing the capability of the DSS-13 antenna servo system to support precise W-band tracking**
- **Reviewing existing W-band telecommunication literature in light of DSS-13 capability and other new technology**
- **Performing an updated W-band link analysis**
- **Studying the feasibility, cost, and required equipment of a laboratory demonstration of a W-band 10 Gbit/second data link**

W-band Assessment Restatement of Q3 Goals



- **Receiver development**
 - Repair receiver, add first lo-stage phase lock, and return to DSS-13
 - Measure phase stability?
 - Decide on noise diode approach and implement
 - New: ready for pulse-cal tone injection?
- **Pointing and Efficiency**
 - Detect point sources
 - Develop a “detectable” point source catalog
 - Apply open-loop conscan technique to detectable point sources
 - Obtain initial first and second order systematic error models
 - Measure residuals with respect to SEMODs
 - Complete aperture efficiency measurement as a function of elevation
 - Acquire data for antenna servo system assessment
 - Perform initial raster scan measurements at X-band
- **Telecommunications**
 - Perform link budget study
 - Perform 10 Gbits/sec “feasibility study”

W-band Assessment FY002 proposal planning



- **Expand the scope of W-band assessment (1/3 work year per “critical” doer)**
- **The vision - sensitivity-optimized, adequately efficient, gravity-compensated, phase-calibrated, well-pointed capability. Routinely operating for VLBI and single-dish continuum and spectroscopic observations.**
- **Ideas**
 - **Efficiency improvement/gravity compensation**
 - **Realign main reflector panels**
 - **Utilize full 34 m**
 - **Panel replacement study**
 - **Patch perforations**
 - **Replace panels?**
 - **Optimize feed horn illumination**
 - **Stage receiver beneath the DFP**
 - **Future subreflector study (size and support optimization, deformable)**
 - **AFCS-like signal-combiner**
 - **Field prototype of future DSN feedback-driven pointing system (what is it??)**
 - **W-band pulse calibration (phase calibration) system**
 - **Telecommunications**
 - **Mature 10 Gbits/sec laboratory demonstration**
 - **Downlink telemetry demonstration**
 - **Atmospheric statistics study**